

Action. The present amendment is intended to be fully responsive to all points of objection and rejection raised by the Examiner, and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application are respectfully requested.

CLAIM OBJECTIONS

Claim 3 is objected to because of the informality that the claim numbering of the dependency of claim 3 is not consistent with that of the remainder of the application. The Applicants have amended claim 3 to be dependent on claim 1, thereby overcoming the Examiner's objection.

CLAIM REJECTIONS - 35 USC § 102

Claims 1, 2, 4, 5, 7, 11, 12, 14-22, 24-28 are rejected under 35 USC § 102(e) as being anticipated by Leger (U.S. Patent No. 5,745,511). The Examiner states that "Figure 3B illustrates a discontinuous phase plate (127) placed between reflectors within a resonator of a laser system to provide phase adjustment and mode selection. As disclosed in column 6, one purpose of custom phase-adjustment element 127 is to enhance the modal discrimination of the laser resonator system. Another purpose of the custom phase-adjustment element 127 is to introduce varying amounts of phase shift into various portions of the cross section of the beam."

The Applicants believe that the Examiner has intended to refer to Fig. 3A and not to Fig. 3B as stated, since Fig. 3B shows only a graph of an output beam profile. The Applicants respectfully disagree with the Examiner's assertion regarding what is shown in Fig. 3A and the accompanying disclosure in column 6. The phase plate described in the Leger reference is quite different from that of the discontinuous phase element claimed in the present application, both in construction and in function.

In the Leger disclosure, there is described a laser resonator with a phase conjunction diffractive mirror as the full reflector of

the resonator. As is shown in Fig. 2A of the Leger disclosure, the accompanying disclosure in columns 3-6, the fundamental mode of the laser resonator is determined primarily by the form of the phase conjunction diffractive mirror (124). This is evident from the basic embodiment described in Figs. 2A and 2B, in which no other mode discriminating element is included. In the Fig. 3A assumed cited by the Examiner, there is added an optional custom phase adjustment element (127), as described in column 6, lines 12-22 of the Leger disclosure, which is no different from phase discrimination plates well known in the art and used to enhance modal discrimination of the laser resonator system by introducing varying amounts of phase shift into various portions of the cross section of the beam. The custom phase adjustment element of the Leger disclosure is described as having a sinusoidal shape.

In contrast to the Leger disclosure, amended claim 1 of the present application recites a "**discontinuous** phase element having at least one sharp **discontinuity** adapted to introduce a discontinuous phase change in at least one mode propagating in said resonator" (emphasis added). Nowhere, to the best of the applicants' understanding, is there described or suggested in the Leger prior art the use of such a discontinuous phase element. [The discontinuity recited in this claim is fundamental to the operation of the claimed invention, which would not function with phase plates not having such a discontinuity.] Furthermore, unlike the phase element in the Leger patent, whose purpose is disclosed as "to **enhance** the modal discrimination of the laser resonator system" (emphasis added), the mode of the Leger resonator system being primarily determined by the phase conjunction diffractive mirror (124), [in the presently claimed invention, the mode is determined essentially solely by the discontinuous phase element recited in claim 1, which **introduces** the discontinuous phase change in at least one mode propagating in the resonator.]

It is therefore respectfully submitted that independent claims 1 and 20 are not anticipated by Leger, and are thus allowable. Claims 2, 4, 5, 7, 11, 12, 14-19, 21-22 and 24-28 are dependent from either of claims 1 or claim 20, and recite further patentable subject matter. Since claims 1 and 20 are now deemed to be allowable, claims 2, 4, 5, 7, 11, 12, 14-19, 21-22 and 24-28 are also deemed to be allowable.

CLAIM REJECTIONS - 35 USC § 103

Claims 3, 6, 8-10, 13 and 23 stand rejected under 35 USC 103(a) as being unpatentable over Leger (U.S. Patent No. 5,745,511), Fink (U.S. Patent No. 5,283,796) and Harris (U.S. Patent No. 3,605,039).

Claims 3, 6, 8-10 and 13 are dependent from amended claim 1, and recite further patentable subject matter, and claim 23 is dependent from claim 20, and recites further patentable subject matter. Since amended claims 1 and 20 are now deemed to be allowable, claims 3, 6, 8-10, 13 and 23 are also deemed to be allowable.

The applicants therefore respectfully submit that claims 3, 6, 8-10, 13 and 23 are believed to be free of the grounds of rejection under 35 USC 103(a). Withdrawal of such rejection is respectfully requested.

DOUBLE PATENTING

Claims 1, 3, 6-9, 11 and 20 are rejected under the judicially created doctrine of obviousness-type double patenting, as being unpatentable over claims 1, 3, 11-13, 15-17 and 21 of U.S. Patent No. 6,134,259. The Examiner asserts that although the conflicting claims are not identical, they are not patently distinct from each other because the claims pertain and encompass the same scope of laser resonator provided with a phase plate within the resonator for phase adjustment and mode discrimination.

Applicants do not necessarily agree with the Examiner's assertions regarding the relationship of the '259 patent disclosure to the invention in the present application. However, in the interests of bringing this application to a successful and speedy


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conclusion, and since U.S. Patent No. 6,134,259 and the present application are commonly owned, the applicants are filing herewith a terminal disclaimer in compliance with 37 CFR 1.321(c). Therefore, the Examiner's rejection of claims 1, 3, 6-9, 11 and 20 under the above-mentioned grounds is now moot.

For all of the reasons set forth above, applicants respectfully submit that all of the claims are now believed to be allowable. Reconsideration and prompt allowance of this application are therefore respectfully requested.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

3. (Amended) An optical resonator according to claim 1 ~~either of the preceding claims~~, and being a passive optical resonator.

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